National Institute of Environmental Health Sciences

Spread of the tiger: Global risk of invasion by the mosquito Aedes albopictus

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Abstract:

Aedes albopictus, commonly known as the Asian tiger mosquito, is currently the most invasive mosquito in the world. It is of medical importance due to its aggressive daytime human-biting behavior and ability to vector many viruses, including dengue, LaCrosse, and West Nile. Invasions into new areas of its potential range are often initiated through the transportation of eggs via the international trade in used tires. We use a genetic algorithm, Genetic Algorithm for Rule Set Production (GARP), to determine the ecological niche of Ae. albopictus and predict a global ecological risk map for the continued spread of the species. We combine this analysis with risk due to importation of tires from infested countries and their proximity to countries that have already been invaded to develop a list of countries most at risk for future introductions and establishments. Methods used here have potential for predicting risks of future invasions of vectors or pathogens.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2212601

Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Human Conflict/Displacement, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: General Mosquito-borne Disease

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Short-Term (

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content